CLAIMS

1. A process for producing a pitch-based carbon fiber sliver, comprising: providing a pitch-based carbon fiber mat comprising a mass of piled-up pitch-based carbon fibers of which fiber extension directions are aligned preferentially in one direction; and directly subjecting the carbon fiber mat to drawing and carding by means of a carding machine while moving the mat in said one preferential alignment direction.

2. A production process according to Claim 1, wherein the pitch-based carbon fiber mat has a resistance (ρ_L) in the preferential extension direction and a resistance (ρ_W) in a direction perpendicular to the preferential extension direction, providing a ratio ρ_L/ρ_W of at most 0.25.

3. A production process according to Claim 1 or 2, wherein the pitch-based carbon fiber mat contains at least 30 wt.% of carbon fibers having a fiber length of at least 100 mm and satisfies the following relations (1) and (2) with respect to M_{100} (N/tex) representing a tensile strength for a test length of 100 mm and M_{200} (N/tex) representing a tensile strength for a test length of 200 mm, respectively in the preferential extension directions of the piled carbon fibers.

$$1.7 \times 10^{-3} \leq M_{100} \leq 1.2 \times 10^{-2} \quad (1)$$

$$0.4 \leq (M_{200}/M_{100}) \leq 1 \quad (2)$$

4. A production process according to any one of Claims 1 - 3, wherein the pitch-based carbon fibers are isotropic pitch-based carbon fibers.

5. A production process according to any one of Claims 1 - 4, wherein the pitch-based carbon fiber mat has been obtained by melt-spinning a petroleum or coal pitch to form pitch fibers, piling the pitch fibers on a horizontal belt so as to extend preferentially in a direction of progress of the horizontal belt conveyer to form a pitch fiber mat, and then infusibilizing and calcining the pitch fiber mat.

6. A production process according to any one of Claims 1 - 5, wherein the pitch fiber has been obtained by melt-spinning the petroleum or coal pitch by means of a centrifugal spinning machine having a horizontal rotation axis.

7. A production process according to any one of Claims 1 - 6, wherein the carding machine is a large-width guile having a pair of front rollers including at least one roller surfaced with an elastic material.

8. A production process according to any one of Claims 1 - 7, further including a step of doubling and drawing the sliver after the carding by the large-width guile by a drawframe.

9. A process for producing a pitch-based carbon fiber spun yarn, comprising: drawing and twisting a pitch-based carbon fiber sliver obtained through a production process according to any one of Claims 1 - 8 by means of a spinning frame to produce a pitch-based carbon fiber spun yarn containing at least 3 wt.% of fibers having a fiber length of at least 150 mm, a number of primary twist of 50 - 400 turns/m, and a tensile strength of at least 0.10 N/tex.